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Case Report

Synovial cavernous hemangioma with juxta-articular hemangioma in a 29-year old woman: A case report

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ABSTRACT

Introduction: Synovial hemangiomas are a rare benign vascular malformation that most commonly affects the knee joint, usually involving the anterior compartment. Histopathology examination is considered the gold standard for the diagnosis of synovial hemangioma. Surgical excision, either done per arthroscopy or per arthrotomy, is the treatment of choice.

Presentation of case: This study presents a 29-year-old female admitted to our hospital in March 2020 who complained of continuous pain, swelling, and recurrent haemarthroses without a history of trauma for six months. The anteroposterior and lateral plain radiographs of the left knee showed no abnormality. An ultrasound of the left knee showed lobulated hypoechoic lesions in intra-articular and infra-suprapatellar pouches. Multiple vessels within the lesion with the low-velocity venous flow have appeared in color-Doppler imaging. Magnetic resonance imaging (MRI) of the left knee showed an irregular soft tissue mass in intra-articular fossa that infiltrating infra-suprapatellar pouches along to vastus medialis muscle (juxta-articular areas) measuring about 87 × 72 × 75 mm. Synovial effusion and bone erosions were notable. Fine-needle aspiration cytology (FNAC) offered hemarthrosis.

The excisional biopsy obtained from the lesion and imprint cytology performed immediately after tissue removal. The cytologic diagnosis was compatible with a benign vascular neoplasm. The histologic exam confirmed synovial hemangioma.

Discussion: Synovial hemangioma is a rare benign tumor of vascular origin arising from synovium-lined tissues, and often affects adolescents and young adults. Synovial hemangioma is often associated with an adjacent cutaneous or deep soft tissue hemangioma. It is a vascular malformation that contains variable amounts of adipose, fibrous, and muscle tissue, as well as thrombi in the vessels. At present, MRI has become the modality of choice for the evaluation of hemangiomas. The final diagnosis established with the histologic examination. The choice treatment is surgical excision.

Conclusion: Although synovial hemangioma is a rare condition, be considered for non-specific clinical symptoms. However, an early diagnosis of synovial hemangioma is fundamental for adequate treatment.

1. Introduction

Synovial hemangioma is a rare entity, consisting of benign proliferation of blood vessels arising in a synovia lined surface, including the joints, bursae, and tendon sheaths [1,2]. The lesion most commonly occurs in children and adolescents. There is a slight preponderance of females to males patients. Occasionally, patients can have recurrent haemarthroses [3,4,5]. Synovial hemangioma is most common on the knee but has also been reported in other joints, including the elbow, wrist, and ankle joints, as well as in tendon sheaths. Synovial hemangioma is often involving adjacent cutaneous or deep soft tissue [1]. Therefore, some clinicians classify knee joint hemangioma as intra-articular, juxta-articular, or intermediate. Based on one estimate, a correct preoperative diagnosis made in only 22% of cases [6,7]. In arthroscopy, the tumor is a lobulated soft, brown, doughy mass with overlying villous synovia. Histopathology shows synovial tissue

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comprising of a lesion having an admixture of vascular space of varying sizes that mostly arrange on the lobular pattern [8].

2. Case presentation

A 29-year-old female admitted to our hospital in March 2020 with continuous pain, swelling, and recurrent haemarthrosis of the left knee for six months. On past medical history, there are no records of trauma or coagulation and bleeding disorders. During the examination, the pulse rate 75 beats per minute with a regular rhythm, and the blood pressure was 11.5/70 mmHg. On physical examination, the patient's vital signs were stable. The patient mentioned a feeling of pain, swelling, and tenderness in the left knee. On laboratory blood examination, all data were within normal limits, including bleeding and coagulation rates. The lateral plain radiograph of the left knee showed an ill-defined faint opacity in supra/infrapatellar punches with focal extra-articular extension. (Fig. 1a) There was no abnormality, especially no signs of phleboliths or bone erosions in the Anteroposterior plain radiograph. (Fig. 1b) An ultrasound of the left knee showed a lobulated hypoechoic lesion in intra-articular and infra-suprapatellar pouches. Multiple vessels seen within the lesion with the low-velocity venous flow in Color-Doppler imaging. Magnetic resonance imaging (MRI) of the left knee joint showed an ill-defined soft tissue lesion in intra-articular space that extended infra-suprapatellar pouches along to vastus medialis muscle next to the knee (juxta-articular areas) measuring about 87 × 72 × 75 mm [Fig. 2a]. It was isointense to muscle on T1WI and heterogeneously hyperintense on T2WI. [Fig. 2b] Occasionally the serpiginous flow voids are associated with thin internal septa. GRE axial images showed multiple foci of signal blooming within the lesion that representing blood degradation products in different stages in the lesion. Synovial effusion and bony erosions were notable. [Fig. 2c] Fine-needle aspiration cytology done, and cytology smears showed a few benign-looking mesenchymal cells without cellular atypia against a hemorrhagic background. A diagnosis of hemarthrosis offered. The patient underwent an open left knee arthrotomy. A sub-total synovectomy carried out the whole of soft tissue mass. Imprint cytology performed immediately after tissue removal. The cytological analysis revealed the presence of small and clusters of uniform spindle cells with a thin cytoplasmic process and fusiform nuclei with a pointed end, corresponding to endothelial cells. Few hemosiderin-laden macrophages were notable. The diagnosis was compatible with a benign vascular neoplasm.

Grossly, the specimen was a discrete pigmented soft tissue mass measuring 85 × 70 × 70 mm, somewhat brownish. The hematoxylin and eosin-stained sections showed an admixture of dilated vascular (cavernous) spaces with thin thickness [Fig. 3a]. Hemosiderin deposits were notable mainly along the proliferative synovial lining. Few scattered hemosiderin-laden macrophages were also seen [Fig. 3b]. No cellular atypia or any morphologic features suggestive of aggressive behavior were notable. The diagnosis of the synovial cavernous haemangioma was re-confirmed on histopathology. Postoperatively, the patient as well, and symptoms were subsiding significantly after two months of physiotherapy. The patient is now in good health.

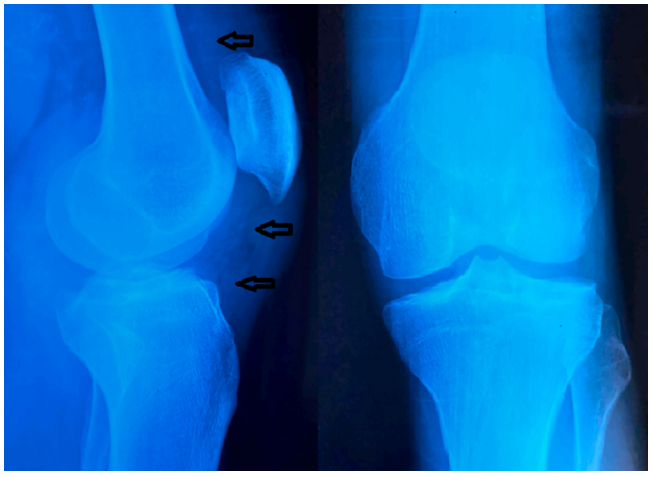

Fig. 1. (a,b). Radiograph of the left knee. (a) Magnified lateral view shows an ill-defined faint opacity (arrow) seen filling the supra/infrapatellar punches with focal extra-articular extension. (arrow). (b) Anteroposterior view (b) No abnormality, especially no signs of phleboliths or bone erosions seen.

3. Discussion

Hemangioma is an abnormal buildup of blood vessels in the skin or internal organs. About one-third of hemangiomas are present at birth. The rest appear in the first several months of life. Usually, capillary hemangioma appears in superficial skin and cavernous hemangioma in deeper skin. Hemangioma grows for a while and then subsides spontaneously. They don't cause problems in most patients. However, some hemangiomas may open and bleed or ulcerate. It may be painful. Depending on their size and location, they may be disfiguring [9]. Synovial hemangiomas constitute less than 1% of all haemangiomas. The most affected joint is the knee joint but should be in other joints such as elbow, ankle, and wrist joints [10]. The clinical signs of synovial hemangioma of the knee joint are not specific. Patients can complain of pain, swelling, and tenderness, limitation of knee motion, periarticular muscle atrophy, and recurrent intra-articular haemorrhage. Ultimately, long-standing knee pain, swelling, and repeated hemarthrosis are clinical signs of synovial hemangioma [11,12]. The knee X-ray findings in synovial hemangioma are not generally specific for diagnosis. It may appear in any soft tissue mass adjacent to the knee. Accompanying phleboliths may be present. Typically, MRI saw as a lobulated or diffuse intra-articular mass. Signals T1 show usually intermediate signal and T2 presented a markedly hyperintense background likely from pooled blood within vascular spaces or low-signal-intensity linear structures within soft tissue lesions, such as fibrous septa or vascular channels with fluid–fluid levels [13]. However, imprint cytology found to be a reliable, rapid, and cost-effective complimentary examination [14,15].

The histologic differentials of synovial hemangioma include PVNS, chronic synovitis, organizing hemorrhage, and angiomatosis [16]. Hyperplastic synovitis characterized by the proliferation of blood vessels in the myxoid stroma. PVNS reveals many histiocytes and multinucleated giant cells in the vascular stroma [17]. There are numerous large, dilated, thin wall spaces in a synovial hemangioma, a finding not seen in organizing hematoma after trauma. Management of synovial hemangioma correlated with the anatomical distribution of the lesion. Arthroscopic excision carried out if the lesion is only intra-articular and well-circumscribed. Occasionally, excisional biopsy of diffuse lesions is difficult arthroscopically, as in our case. Therefore, careful and complete excision recommended for diffuse and extra-articular synovial hemangioma [18]. However, often the only method for distinguishing synovial hemangioma is histopathologic examination [19].

4. Conclusion

Synovial hemangioma of the knee is a rare entity and makes a challenge to diagnose because only clinical and imaging findings do not provide a specific guide for correct diagnosis. But we must always keep in mind that If the joint aspirate was bloody, synovial hemangioma should be at the first line of diagnosis. At present, MRI has become the modality of choice for the evaluation of hemangiomas. The final diagnosis e established with the cytohistopathologic examination. Misdiagnosis or any delay in diagnosing synovial hemangioma leads to various clinical complications such as reduced range of motion, muscle atrophy, and osteocartilage damages. However, an early diagnosis of synovial haemangioma is fundamental for adequate treatment.

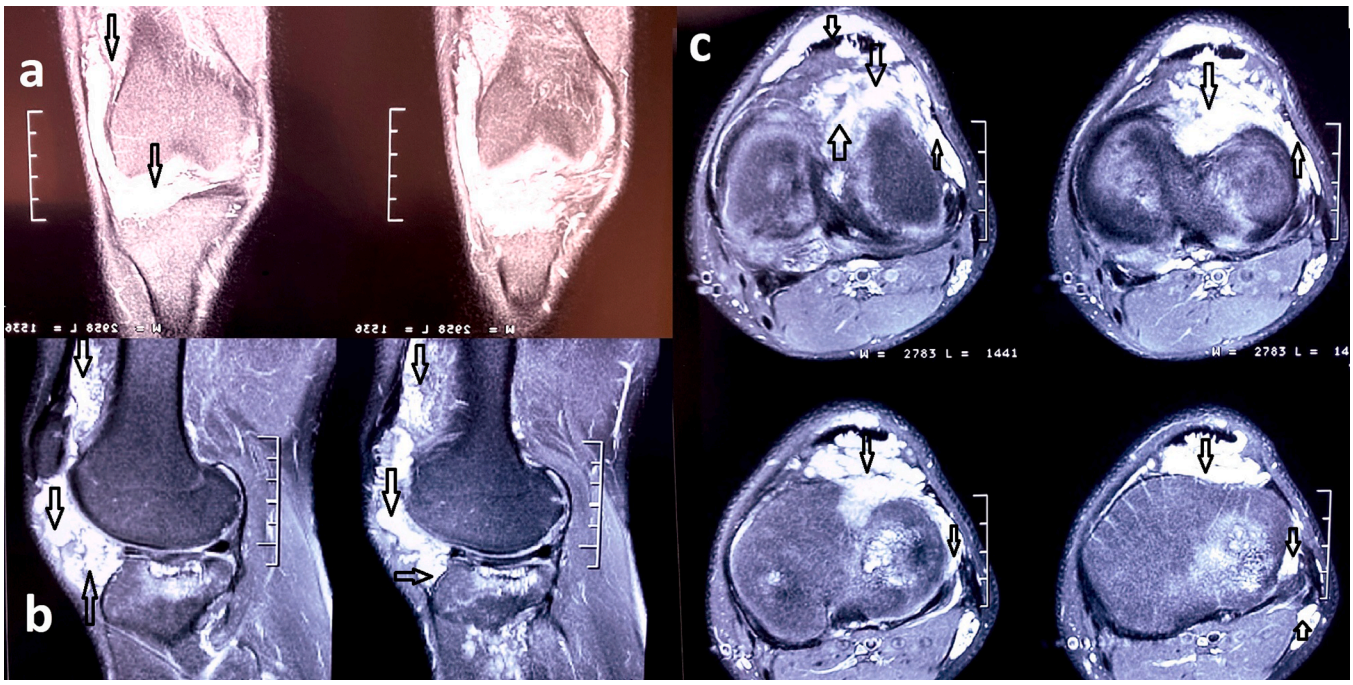

Fig. 2. (a,b,c). Magnetic resonance imaging images of the left knee. (a) A sagittal T1-weighted MRI showed a lobulated mass within the supra/infrapatellar punches that are predominantly isointense to with focal extra-articular extension with scattered tiny areas of fat. (b) Sagittal fat-suppressed T2-weighted MR image shows a heterogeneous mass demonstrating areas of both low and high signal intensities. Note the presence of a small amount of joint fluid (arrows). (c) GRE axial images show coronal proton density fat-suppressed image shows the mass lesion with a heterogeneous signal containing fibrous septa and irregular margin (arrow).

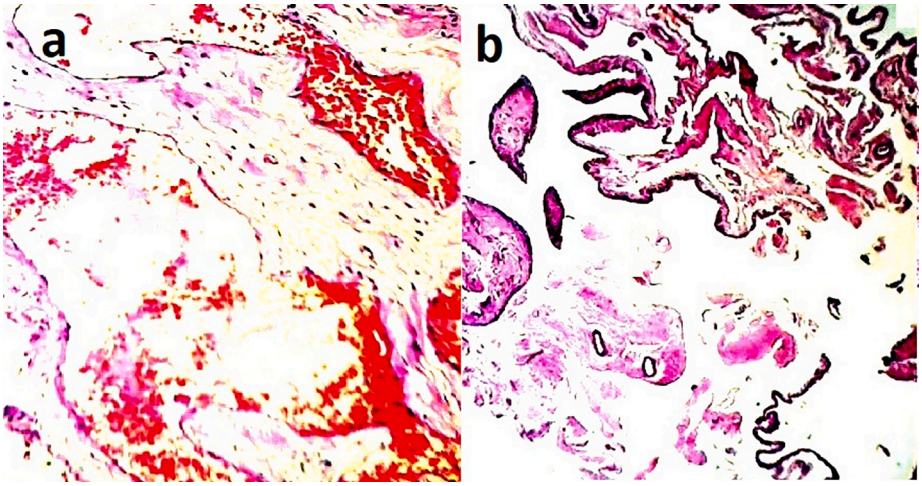

Fig. 3. (a,b). Photomicrograph of synovial cavernous hemangioma.(a) The neoplasm consists of large, thin-walled blood vessels, erythrocyte-filled vascular spaces lined by bland endothelial cells within a loose connective tissue of the synovium (black arrow) (H&E, ×100).(b) Few scattered hemosiderin-laden macrophages were also seen (blue arrow).

5. Patient consent statement

Legal consent is granted by the patient reported in this manuscript.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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